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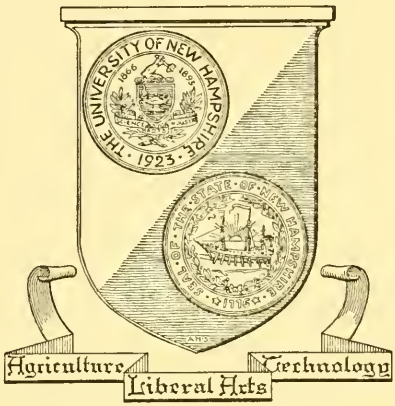

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THE UNIVERSITY OF NEW HAMPSHIRE
AGRICULTURAL EXPERIMENT STATION
DEPARTMENT OF AGRICULTURAL CHEMISTRY

Inspection of Commercial Fertilizers for 1936

MADE FOR THE
STATE DEPARTMENT OF AGRICULTURE

T. O. Smith and H. A. Davis

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INSPECTION OF COMMERCIAL FERTILIZERS

MADE FOR THE STATE DEPARTMENT OF AGRICULTURE

The inspection of commercial fertilizers reported in this bulletin was made under the direction of the Honorable Andrew L. Felker, Commissioner of Agriculture. The state inspector, Mr. Eugene D. Sanborn, collected samples of 112 brands of fertilizer materials which were offered for sale by dealers or had been delivered to consumers during the year ending June, 1936. The general character of the fertilizer materials collected is shown by the following classification:

Complete fertilizers	82
Phosphoric acid and potash	1
Superphosphate (acid phosphate)	6
Ammo-phos	1
Nitrate of soda	2
Calnitro	1
Cyanamid	1
Sulphate of ammonia	2
Muriate of potash	3
Ground bone	6
Tankage	1
Natural manures	6
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THE FERTILIZER LAW

The state official charged with the enforcement of the fertilizer law is the Commissioner of Agriculture. Copies of the law may be obtained from his office in Concord. All inquiries concerning the law and all matters relative to the registration of brands should be addressed to his office.

The purchaser's refusal to buy a fertilizer which does not conform to the law in every respect, will not only assist in the enforcement of the law but will at the same time insure himself the protection of the law. If the buyer fails to assure himself the legal requirements have been met, he accepts the fertilizer at his own risk. Whether or not the purchaser familiarizes himself with the complete text of the fertilizer law, he should not accept from the dealer any bag of fertilizer which is not tagged and guaranteed in compliance with the law. The law governing these matters follows:

"Every lot or parcel of commercial fertilizer or fertilizer material sold or offered or exposed for sale within this state shall be accompanied by a plainly printed statement, clearly and truly certifying the number of net pounds of fertilizer in the package, the name, brand or trademark under which the fertilizer is sold, the name and address of the manufacturer or importer, the location of the factory, and a chemical analysis stating the minimum percentage of nitrogen, of available phosphoric acid and of water soluble potash expressed in whole numbers.

"No fertilizer or fertilizer material containing the three essential fertilizing elements, nitrogen, phosphoric acid and potash may be sold or offered for sale if the total minimum plant food nutrients contained therein is less than fourteen per cent by weight, provided however that natural animal and bird manures shall be excepted from the provisions of this section."

The chief purpose of the fertilizer law is to protect the consumer against the misbranded products which would doubtless soon appear upon the market if the sale of fertilizer was not under state regulation. The value of a fertilizer depends mainly upon its content of available plant food, particularly nitrogen, phosphoric acid and potash. The presence of these constituents can only be determined by a chemical analysis. To in-

sure that they are being furnished by the manufacturer in the guaranteed amounts, it is necessary that each brand of fertilizer offered for sale be officially inspected and analyzed one or more times each year. When failure to meet the guarantee is proven by chemical analysis, the prosecution or seizure provisions of the law may be invoked.

In Table I are tabulated the grades of complete fertilizers analyzed in this year's inspection, the number of brands found by the inspector in each grade, the average per cent of nitrogen, of available phosphoric acid, and of water soluble potash of the brands in each grade and the average retail price per ton.

TABLE I.

Formula	Number of brands	Average per cent nitrogen	Average per cent available phosphoric acid	Average per cent water soluble potash	Average retail price per ton
2—8—10	2	2.44	8.54	10.92	$31.55
2—12—4	2	2.39	12.22	4.37	33.00
3—10—4	5	2.95	10.29	3.81	29.84
3—7—6	1	3.57	7.63	5.84	50.00
3—10—6	1	2.92	10.64	6.03	33.40
4—8—4	10	4.05	8.25	4.10	32.61
4—8—7	3	4.02	8.68	7.01	35.33
4—8—8	2	4.22	8.36	8.16	28.40
4—8—10	10	4.04	8.23	9.83	35.71
4—12—4	3	4.13	12.00	4.24	50.60
4—16—4	1	4.15	16.00	4.06	36.00
4—16—20	1	4.16	15.83	20.93	39.60
5—8—7	10	5.04	8.55	6.91	36.08
5—8—10	3	4.95	8.18	9.98	36.93
5—10—4	1	5.01	10.85	3.91	90.00
5—10—5	1	5.04	10.45	5.29	———
5—10—10	1	4.84	10.37	10.04	65.00
6—8—6	1	6.33	8.50	6.23	27.80
6—11—10	1	6.10	11.33	9.64	42.00
7—6—6	5	6.95	6.47	6.09	38.35
7—8—5	1	6.68	8.07	5.23	35.00
8—5—8	1	7.70	6.44	8.49	50.00
8—6—2	2	8.15	7.10	2.25	49.50
8—6—6	1	8.28	6.62	6.54	39.00
8—8—8	1	8.44	8.89	11.47	42.00
8—16—14	4	7.89	16.27	13.40	50.25
8—16—16	2	8.03	16.13	15.80	45.90
8—16—20	1	7.42	17.35	19.26	57.00
8—20—12	1	8.79	18.98	9.83	43.80
8—24—8	1	8.24	23.75	8.82	43.80
9—6—6	1	8.92	6.19	6.02	42.80
12—4—4	1	12.17	4.85	4.85	31.20
12—16—12	1	11.65	16.67	12.00	51.60

CONFORMITY TO GUARANTEE

One brand was deficient in all of the three guaranteed constituents, nitrogen, available phosphoric acid, and water soluble potash. Sixteen brands were deficient in two of the three constituents, 14 in nitrogen and potash, and two in available phosphoric acid and potash.

Thirty-one brands were found to contain less than the guaranteed amount of nitrogen. The greatest deficiency was 0.58 per cent. The average of the other 30 nitrogen deficiencies was 0.17 per cent.

Twelve brands failed to meet the guarantee in available phosphoric acid. One brand, a tankage, was deficient 1.93 per cent. The average of the other 11 deficiencies was 0.33 per cent.

Thirty-two brands contained less potash than the guarantee. The greatest deficiency was 1.25 per cent. The average of the other 31 potash deficiencies was 0.33 per cent.

In the tabulation of the analysis in the following pages deficiencies of one-fourth of one per cent or more are shown in bold-faced type. The manufacturers are arranged alphabetically. The brand name is listed alphabetically or numerically by formula under the manufacturer.

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
American Agricultural Chemical Co. North Weymouth, Mass.								
AA Complete Manure with 10% Potash 4-8-10	4.00	4.04	....	9.27	8.00	8.49	10.00	9.66
AA Corn Favorite 3-10-4	3.00	2.90	....	10.99	10.00	10.28	4.00	3.44
AA Double Strength Fertilizer 8-16-14	8.00	8.02	....	15.79	16.00	15.43	14.00	13.39
AA Monarch Fertilizer 4-8-4	4.00	4.08	....	8.84	8.00	8.44	4.00	4.03
AA Potato and Vegetable Fertilizer 5-8-7	5.00	5.02	....	8.79	8.00	8.37	7.00	6.72
AA Potato Grower 5-8-10	5.00	4.83	....	8.67	8.00	8.07	10.00	9.68
AA Superphosphate 16%	....	....	....	17.25	16.00	16.29	....	....
Agrico for Aroostook with 10% Potash 5-8-10	5.00	5.01	....	8.98	8.00	8.25	10.00	10.12
Agrico for Corn 3-10-6	3.00	2.92	....	11.34	10.00	10.64	6.00	6.03
Agrico for Fruit 9-6-6	9.00	8.92	....	6.53	6.00	6.19	6.00	6.02
Agrico for Lawns, Trees and Shrubs 7-6-6	7.00	7.00	....	6.62	6.00	6.28	6.00	6.00
Agrico for New England 4-8-10	4.00	4.01	....	8.88	8.00	8.32	10.00	9.63
Agrico for Potatoes 8-16-20 Double Strength	8.00	7.42	....	17.81	16.00	17.35	20.00	19.26
Agrico for Potatoes and Vegetables 5-8-7	5.00	4.86	....	9.37	8.00	8.89	7.00	6.37
Bowker's Market Garden Fertilizer 4-8-4	4.00	4.01	....	8.94	8.00	8.46	4.00	3.89
Bowker's Stockbridge Early Crop Manure	5.00	5.05	....	9.45	8.00	8.99	7.00	6.49

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Bowker's Stockbridge Potato and Vegetable Manure 4-8-10	4.00	4.24	....	8.62	8.00	8.05	10.00	9.74
Bradley's Complete Manure with 10% Potash 4-8-10	4.00	4.11	....	8.52	8.00	8.01	10.00	10.00
Bradley's XL Fertilizer 3-10-4	3.00	3.02	....	10.66	10.00	10.06	4.00	3.75
Fine Ground Bone	2.47	2.26	23.00	23.45	....	11.95	....	....
Muriate of Potash	....	....	....	....	....	....	50.00	49.70
Netco Greens Formula 8-6-2	8.00	8.20	....	7.32	6.00	6.83	2.00	2.21
Prolific 10% Potash Fertilizer 2-8-10	2.00	2.26	....	8.69	8.00	8.19	10.00	10.00
Pulverized Sheep and Goat Manure	1.23	1.42	1.00	1.00	....	0.96	2.00	2.93
Sulphate of Ammonia	20.50	20.82	....	....	....	....	....	....
American Cyanamid Co. Niagara Falls, Canada								
Aero Cyanamid Granular	21.00	21.26	....	....	....	....	....	....
Ammo-Phos 11-48-0	11.00	11.09	....	50.45	48.00	49.89	....	....
Apothecaries Hall Co. Waterbury, Conn.								
Bone Meal	3.70	3.75	21.00	22.30	....	9.48	....	....

Liberty 8-6-6	8.00	8.28	....	6.90	6 00	6.62	6.00	6.54
Liberty High Grade Corn 2-12-4	2.00	2.59	....	13.43	12.00	12.33	4.00	4.66
Liberty High Grade Market Garden 5-8-7	5.00	5.27	....	10.27	8.00	9 65	7.00	6.76
Liberty Market Garden Special 4-8-4	4.00	4.31	....	9.06	8.00	8.82	4.00	4.55
Liberty Potato and Vegetable 2-8-10	2.00	2.61	....	9.25	8 00	8 89	10.00	11.83
Liberty Top Dresser for Grass and Grain 8-8-8	8.00	8.44	....	9.26	8.00	8.89	8.00	11.47
Armour Fertilizer Works Carteret, N. J.								
Armour's Big Crop Fertilizer 4-8-4	4 00	4.01	....	8.89	8.00	8.23	4 00	4.34
Armour's Big Crop Fertilizer 4-8-7	4.00	3.92	....	8.77	8.00	8.41	7.00	6.67
Armour's Big Crop Fertilizer 4-8-8	4.00	3.89	....	8.73	8.00	8.13	8.00	8.23
Armour's Big Crop Fertilizer 4-8-10	4.00	3.97	....	8.62	8.00	8.10	10.00	9.65
Armour's Big Crop Fertilizer 4-16-4	4.00	4.15	....	17.03	16.00	16.00	4.00	4.06
Armour's Big Crop Fertilizer 5-8-7	5.00	4.90	....	8.70	8.00	8.00	7.00	6.62
Armour's Big Crop Fertilizer 6-11-10	6.00	6.10	....	12.03	11.00	11.33	10.00	9.64
Armour's Big Crop Superphosphate 16%	....	....	....	16.92	16.00	16.59	....	....
Barrett Company Hopewell, Va.								
Arcadian, the American Nitrate of Soda	16.00	16.13	....	....	....	....	....	....
Chilean Nitrate Sales Corp. New York, N. Y.								
Chilean Nitrate of Soda, Champion Brand	16.00	16.04	....	....	....	....	....	....

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Consolidated Rendering Co. Boston, Mass.								
Corenco 3-10-4 Animal Brand	3.00	3.00	....	10.73	10.00	10.41	4.00	3.95
Corenco 4-8-4 Corn and Vegetable	4.00	4.03	....	8.38	8.00	8.16	4.00	4.12
Corenco 4-8-10 Potato Grower	4.00	4.01	....	8.68	8.00	8.48	10.00	10.17
Corenco 4-12-4 Complete Manure	4.00	3.87	....	12.79	12.00	12.51	4.00	3.93
Corenco 5-8-7 General Crop Manure	5.00	5.01	....	8.50	8.00	8.22	7.00	7.22
Corenco 5-8-10 Peerless Potato	5.00	5.01	....	8.65	8.00	8.23	10.00	10.15
Corenco 5-10-5	5.00	5.04	....	10.87	10.00	10.45	5.00	5.29
Corenco 7-6-6 Complete Fruit and Top Dressing	7.00	6.79	....	6.63	6.00	6.41	6.00	6.05
Corenco 8-16-14 Two in One	8.00	7.82	....	17.27	16.00	16.63	14.00	13.65
Corenco Ground Bone	2.47	2.59	23.00	24.10	....	13.10	....	....
Corenco Sheep Manure	1.25	1.61	1.00	1.02	....	0.96	2.00	3.20
New England 8-6-2 Putting Green Special	8.00	8.10	....	7.42	6.00	7.37	2.00	2.28
Muriate of Potash	....	....	....	....	....	....	60.00	61.04
Raw Bone and Tankage	4.00	3.62	20.00	21.45	....	10.05	....	....
Sulphate of Ammonia	20.50	20.98	....	....	....	....	....	....
Superphosphate 16%	....	....	....	16.95	16.00	16.91	....	....

Eastern States Farmers' Exchange Springfield, Mass.								
Eastern States 0-14-6 Fertilizer	....	....	....	15.45	14.00	15.09	6.00	7.14
Eastern States 4-8-8 Fertilizer	4.00	4.54	....	9.18	8.00	8.58	8.00	8.09
Eastern States 4-12-4 Fertilizer	4.00	4.36	....	12.86	12.00	11.62	4.00	4.36
Eastern States 4-16-20 Fertilizer	4.00	4.16	....	16.36	16.00	15.83	20.00	20.93
Eastern States 6-8-6 Fertilizer	6.00	6.33	....	9.10	8.00	8.50	6.00	6.23
Eastern States 8-16-16 Fertilizer	8.00	8.22	....	16.21	16.00	16.00	16.00	16.39
Eastern States 8-20-12 Fertilizer	8.00	8.79	....	19.23	20.00	18.98	12.00	9.83
Eastern States 8-24-8 Fertilizer	8.00	8.24	....	24.22	24.00	23.75	8.00	8.82
Eastern States 12-4-4 Fertilizer	12.00	12.17	....	4.89	4.00	4.85	4.00	4.85
Eastern States 12-16-12 Fertilizer	12.00	11.65	....	16.76	16.00	16.67	12.00	12.00
Eastern States 20% Superphosphate	....	....	20.50	21.85	20.00	21.24	....	....
Eastern States Calnitro	20.50	20.67	....	....	....	....	....	....
International Agricultural Corp. Woburn, Mass.								
Caribee Market Garden Fertilizer 5-10-10	5.00	4.84	....	11.07	10.00	10.37	10.00	10.04
International 4-8-4	4.00	4.23	....	7.84	8.00	7.58	4.00	4.00
International 4-8-10	4.00	3.92	....	8.29	8.00	7.82	10.00	9.72
International 5-8-7	5.00	5.01	....	8.42	8.00	8.03	7.00	7.00
International 7-6-6	7.00	7.02	....	6.79	6.00	6.55	6.00	6.11
International 8-16-14	8.00	8.02	....	16.96	16.00	16.52	14.00	13.82
International 8-16-16	8.00	7.84	....	16.61	16.00	16.25	16.00	15.21
International Caribee Sheep Manure	1.02	1.57	....	0.94	0.50	0.88	2.00	2.99
International 16% Superphosphate	....	....	....	17.02	16.00	16.35	....	....

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Lowell Fertilizer Co. Boston, Mass.								
Lowell 3-10-4 Animal Brand	3.00	2.92	....	10.87	10.00	10.59	4.00	3.86
Lowell 4-8-4 Corn and Vegetable	4.00	3.87	....	8.23	8.00	8.00	4.00	3.88
Lowell 4-8-10 Potato Grower	4.00	3.88	....	8.89	8.00	8.62	10.00	**9.15**
Merrimack Farmers' Exchange Concord, N. H.								
Merrimack Brand 3-10-4	3.00	2.90	....	10.41	10.00	10.12	4.00	4.05
Merrimack Brand 4-8-4	4.00	3.90	....	8.42	8.00	8.06	4.00	4.04
Merrimack Brand 4-8-10	4 00	3.81	....	8.20	8.00	8.00	10.00	10.00
Merrimack Brand 5-8-7	5 00	4.84	....	8.56	8.00	8.27	7.00	7.00
Merrimack Brand 7-6-6 Top Dressing	7.00	6.80	....	6.74	6.00	6.52	6.00	6.01
Merrimack Brand 7-8-5	7.00	6.68	....	8.27	8.00	8.07	5.00	5.23
Merrimack Brand 8-16-14	8.00	7.69	....	17.10	16.00	16.50	14.00	12.75

Manchester Rendering Co. Manchester, N. H.								
Tankage	5.75	8.56	....	8.68	8.00	6.07	....	....
Natural Guano Co. Aurora, Ill.								
Sheep's Head Cattle Manure	2.00	2.03	....	0.89	1.00	0.68	2.00	2.70
Sheep's Head Pulverized Sheep Manure	2.00	2.06	....	1.07	1.00	0.97	2.00	2.91
Potash Export, M. Y. Amsterdam, Holland								
Muriate of Potash	....	....	....	....	....	....	60.00	60.00
Rogers & Hubbard Co. Portland, Conn.								
Ground Bone	2.47	2.01	22.85	29.50	....	17.75	....	....
Hubbard's All Soils All Crops 4-8-4	4.00	4.03	....	9.55	8.00	8.17	4.00	3.92
Hubbard's Corn and Grain Fertilizer 2-12-4	2.00	2.18	....	13.74	12.00	12.10	4.00	4.08
Hubbard's Potato Fertilizer 5-8-7	5.00	5.14	....	9.75	8.00	8.19	7.00	7.01
Hubbard's Superphosphate	....	....	....	17.18	16.00	16.88	....	....
Oats and Top Dressing	8.00	7.70	8.00	8.00	5.00	6.44	8.00	8.49
Red H Brand 4-8-4	4.00	4.02	....	9.26	8.00	8.56	4.00	4.23
Red H Brand 4-8-7	4.00	4.11	....	9.20	8.00	8.64	7.00	7.32
Red H Brand 4-8-10	4.00	4.37	....	8.94	8.00	8.39	10.00	10.56
Red H Brand 5-8-7	5.00	5.25	....	9.55	8.00	8.86	7.00	7.87

	Nitrogen		Phosphoric Acid				Potash	
			Total		Available			
	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	Found
Red H Brand 7-6-6	7.00	7.14	....	7.31	6.00	6.61	6.00	6.29
Seeding Down Fertilizer	3.00	3.57	12.00	12.30	7.00	7.63	6.00	5.84
Sheep and Goat Manure	1.25	1.62	....	1.05	1.00	0.87	2.00	3.31
Soluble Corn and Market Garden Manure	4.00	4.02	10.00	10.85	8.00	9.00	7.00	7.04
Swift & Co. Baltimore, Md.								
Bone Meal Fertilizer	2.47	3.02	23.00	25.47	....	14.37	....	....
Vigoro for Lawns, Flowers, Vegetables, Shrubs and Trees	4.00	4.16	....	12.95	12.00	11.86	4.00	4.42
Tennessee Corporation New York, N. Y.								
Loma	5.00	5.01	....	11.26	10.00	10.85	4.00	3.91

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